

## PERCENT YIELD PROBLEMS

1. The reaction of 6 mol of hydrogen with 1.5 mol of nitrogen produces 2.4 mol of ammonia. What is the percent yield of the reaction?

2. In an experiment, 2.86 g of solid  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$  is heated and its mass decreases by 1.44 g. What is the efficiency (percent yield) of the experiment?

3. Heating of 40 g of an impure sample of  $\text{CaCO}_3$  yields 6.72 L of  $\text{CO}_2$  gas at STP. What is the percentage of  $\text{CaCO}_3$  by mass in the sample?

4. 16 g mixture containing FeO and Fe powder reacts with hydrochloric acid and 2.24 L of  $\text{H}_2$  produce at STP. What is the percentage by mass of FeO?

5. 40 g of an alloy made from Al and Zn is reacted with sufficient amount of HCl and 38.1 L of  $\text{H}_2$  at STP are produced. What is the percentage of Al by mass in the mixture?

6. How many grams of carbon dioxide are released when a 53 g of sodium carbonate sample that is 20 % reacts completely with hydrochloric acid?

7. A 25 gram sample of iron can react completely with 200 g of 14.6 % hydrochloric acid solution by mass. Calculate the mass percentage of iron in the sample.

8. How many grams of magnesium sample that is 80 % pure, are needed to produce 11.2 L of hydrogen gas at STP from the reaction with hydrochloric acid?

9. How many liters of hydrogen gas at STP are produced at STP when a piece of aluminum reacts with 73 g of 20 % hydrochloric acid?

10. When 20g of impure  $\text{CaCO}_3$  is reacted with sufficient HCl solution, 1.12L of  $\text{CO}_2$  is produced. What is the purity percentage of  $\text{CaCO}_3$ ?